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ABSTRACT

The study deals with the motivational characteristics which relate to divergent thinking and tests three hypotheses: no significant difference with regard to their fluency, flexibility, originality or combined divergent thinking scores exists between children with (1) high and low need for approval, (2) high and low anxiety, and (3) approval needs and anxiety. 11th and 12th grade students were administered a series of psychological tests measuring need for approval, anxiety, and divergent thinking using the Social Desirability Scale, Sarason's General Anxiety Scale, and the Consequences and Alternate Uses Tests. The following conclusions were drawn: (1) the hypothesized results were obtained only when originality was used; (2) need for approval was found to be negatively related to originality; (3) the relationship between anxiety and originality approached significance in the direction predicted; (4) the need to measure originality was identified and discussed; and (5) the possibility that anxiety might be curvilinearly related to divergent thinking was suggested. (Author/MC)

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The Effects of Need for Approval and General Anxiety on Divergent Thinking Scores.[1]

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This study was concerned with the motivational characteristics which relate to divergent thinking. More specifically, possible relationships between need for approval (as defined by Marlowe and Crowne, 1960) and divergent thinking and between anxiety and divergent thinking were examined. In addition, the possibility that anxiety moderates the effect of need for approval on divergent thinking was considered.

Marlowe and Crowne (1960) defined social desirability as behavior motivated by a need for approval and the expectancy that approval can be obtained by culturally acceptable behavior. They described the individual with high need for approval as one with low self-concept who is very dependent on social recognition and reinforcement from others. He has learned that conforming behavior involves the fewest threats to his self-esteem and the fewest risks of self-exposure.

By contrast, most characterizations of "highly creative individuals" (e.g., Maslow, 1954; Crutchfield, 1962; MacKinnon, 1962; Getzels and Jackson, 1962) suggested that they are curious and inquiring, dependent on their own standards rather than those of other people, independent, and motivated intrinsically by the sheer challenge of a problemrather than extrinsically. The highly creative individual has been described as confident in his own

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ability, likely to resist external pressure and criticism, stimulus-free, and likely to disagree with conventional standards of success. The writers regard divergent thinking as a relatively stable composite of complex abilities which are importantly related to, but not equivalent to, creative thinking (cf., Guilford, 1967). It seemed appropriate, therefore, to postulate a negative relationship between need for approval and those aspects of creative ability measured by divergent thinking tests. Ss high on Marlowe and Crowne's Social Desirability Scale (1960) would be expected to score lower on such measures than persons low on the social desirability measure.

Ruebush (1963) reviewed studies of the relationship between anxiety and cognitive variables and concluded that most studies have tended to concentrate on the relationship between anxiety and convergent rather than divergent thinking variables. Past research tended to show a moderate, negative relationship between anxiety and both intelligence and academic achievement (McCandless and Castaneda, 1956; Sarason et al., 1960; Feldhusen and Klausmeier, 1962; Ripple and O'Reilly, 1966). In the few studies which have considered the relationship between anxiety and divergent thinking, the results were not conclusive. Wadia and Newell (1963) found no significant difference between high and low anxious subjects on a verbal measure of divergent thinking, but they did find a significant negative relation between anxiety and a divergent performance task for males. Feldhusen and Denny (1965) found no relationship between level of anxiety and performance on five divergent thinking tests which loaded on a fluency factor. However, they did find significant interactions of sex with anxiety on teachers' ratings and children's self-ratings of creative characteristics. Another study by Feldhusen, Denny, and Condon

(1965) showed no significant relationship between anxiety and originality, flexibility, ideational fluency, and creativity self-ratings.

Ruebush (1963) reported limited, indirect evidence for a negative relationship between anxiety and divergent thinking. He cited studies showing that anxiety tends to impair performance on such verbal problem solving tasks as word fluency, word association, and word completion tests, and on such nonverbal tasks as figure-drawing, maze, and motor tests. Wallach and Kogan (1965) found a significant negative relationship between defensiveness (a means of coping with anxiety) and divergent thinking. In summary, while many researchers have predicted a negative relationship between anxiety and divergent thinking, the limited number of past investigations have yielded inconsistent results. These results may be accounted for in part by the differing definitions of anxiety and divergent thinking employed in these studies, and the varying instruments used to measure both variables.

The following null hypotheses were tested in this study:

1) There is no significant difference between children with high and low need for approval, with regard to their fluency, flexibility, originality, or combined divergent thinking scores.

2) There is no significant difference between children with high and low anxiety, with regard to their fluency, flexibility, originality, or combined divergent thinking scores.

3) There is no significant interaction between anxiety and need for approval for children with regard to their scores on fluency, flexibility, originality, and combined divergent thinking scores.

(It was expected that these hypotheses would be rejected.)

METHOD

Sample. In 1966, eleventh and twelfth grade students from public schools in a small midwestern city were administered a series of psychological tests. Complete data for the four instruments used in this study were available for 194 students, 106 males and 88 females. All tests were administered by university staff members.

Instruments. The following instruments were administered to all subjects (Ss):

(1.) Need for Approval. Need for approval (NFA) was measured using the Social Desirability Scale developed by Marlowe and Crowne (1960). Marlowe and Crowne (1960) reported an internal consistency coefficient (Kunder-Richardson Formula 20) of .88 and a one month test-retest correlation of .89.

(2.) Anxiety. General anxiety was measured using Sarason's (1960) General Anxiety Scale. Sarason et al. (1960) reported test-retest reliability coefficients ranging from .64 to .79 and averaging .72. They also reported initial validity studies indicating that the GASC was significantly and negatively correlated with IQ and achievement test scores.

(3.) Divergent Thinking. The Consequences Test (Christensen, Merrifield, and Guilford, 1960) and the Alternate Uses Test (Wilson, Christensen, Merrifield, and Guilford, 1960) were used as measures of divergent thinking. The Consequences Test was used to obtain fluency and originality scores; the Alternate Uses Test yielded a flexibility score. In addition, a combined total score was calculated (the mean of an individual's fluency, flexibility, and originality scores, after each had been transformed to standardized scores based on $\bar{x} = 50$, S.D.= 10). For the Consequences Test, reliability coefficients ranging from .67 to .87 were reported. For the Alternate Uses

Test reliability estimates ranged from .62 to .85.

Procedures. The high and low levels for each independent variable were determined by taking the highest 70 scores (approximate highest third of the sample) and the lowest 70 scores (approximate lowest third) from the total sample of 194 Ss. The number of observations used in each cell is summarized in Table 1. There are 32 Ss high on both independent variables, 19 high on anxiety but low on need for approval, and 32 low on both independent variables.

A summary of the means and standard deviations for high and low levels of the two independent variables is presented in Table 2. The difference between means of high and low groups was significant at the .0001 level.

All hypotheses were tested using two-way analysis of variance (ANOVA) with fixed factors and unequal cell frequencies (Winer, 1962; pp. 241-244). The data were analyzed using unweighted means. The two independent variables, each having two levels, were anxiety and need for approval. Four separate analyses were conducted, each with a different dependent variable (fluency, flexibility, originality, and total score).

The first hypothesis was tested by examining the main effect for need for approval in the four ANOVAS. The second hypothesis was treated in the same fashion, by examining the main effect for anxiety in the four ANOVAS. The last hypothesis was tested by examining the interaction between need for approval and anxiety with regard to their effect on the four dependent variables used (fluency, flexibility, originality, and combined divergent thinking score). Alpha was set at .05 for all tests. In order to test the assumption of homogeneity of variance, F max tests (Winer, 1962) were performed.

Results. The results of the ANOVA used to evaluate these hypotheses are summarized in Table 3.

Hypothesis One. This hypothesis was treated by testing the main effect of need for approval on divergent thinking. It was anticipated that the motives and personality characteristics of the person who displays a strong need for approval were opposite to those of the highly "creative" individual. Thus, a significant main effect for need for approval was expected. The results are summarized in Table 3. However, only the main effect for NFA on originality was significant ($p < .05$). Thus, the expected results were not obtained, except when originality was used as the dependent variable.

Hypothesis Two. This hypothesis was tested by examining the main effect for anxiety on divergent thinking. It was anticipated that a high level of anxiety would inhibit divergent thinking, so that it was expected that the null hypothesis would be rejected. None of the main effects for fluency, flexibility, or combined divergent thinking score was significant. The main effect for originality approached significance ($p < .10$) in the direction anticipated. Thus, the null hypothesis could not be rejected, with the qualification that when originality was the dependent variable, the results approached an acceptable level of significance.

Hypothesis three. The third hypothesis concerned the interaction of need for approval and anxiety on divergent thinking scores. It was anticipated that anxiety might moderate the effects of need for approval on divergent thinking, and so a significant interaction was anticipated. There were, however, no significant interactions; the null hypothesis could not be rejected for any of the four dependent variables.

DISCUSSION

In view of our results, which showed need for approval and anxiety to be related to originality and not to flexibility and fluency, it is appropriate

to ask, "Why were significant results obtained only for originality? What is there about originality that might have resulted in its being found to be significantly related to anxiety and need for approval?" Originality, like fluency and flexibility, is a measure of divergent thinking. It may be that, among several such abilities, all of which correlate to some extent with a more comprehensive concept of "Creativity," originality is the most strongly related to the criterion of creativity. Central to many definitions of creativity is the view that creative behavior primarily involves a product which is new, different, unconventional, or in some way unique. This type of behavior was hypothesized to be in direct opposition to the more stereotypic, conventional, or conforming behavior typical of the person with high need for approval or a high level of anxiety. Of the three divergent thinking abilities studied, originality (the production of unusual or remotely connected consequences to an event) seems most to coincide with a borader definition of creativity. Central to both is the stress on responses (whether verbal or behavioral) that are in some way unique and different rather than common or conventional. Fluency is concerned only with the quantity of responses a person makes, while flexibility considers only how varied the responses are. This analysis, admittedly post hoc, may explain why the predicted results were confirmed only when originality was used as the dependent variable.

A related consideration is whether the measures of divergent thinking used were actually appropriate for the purposes of this study. It seems possible that the lack of significant relationships of anxiety (a personality variable) and need for approval (a motivational variable) with divergent thinking might be because they are more clearly cognitive variables. A broader

conception of creativity, which would also involve personality and motivational dimensions not included in the assessment procedure, may be needed. Anxiety, and need for approval, may relate chiefly to social behavior, while divergent thinking is essentially internal, and at best, only a partial index of a more complex "Creativity" variable. Thus, a more "global" measure of creativity, which incorporated personality or social aspects, might be expected to yield different results.

It is also possible that divergent thinking scores might vary for different populations, or that the relationship between divergent thinking and other variables varies similarly. For instance, adolescents (used in the present study), as a group, might be less stable in divergent production ability than older groups. In addition, adolescents might view social desirability differently than other groups, hence causing a difference in the relationship between need for approval and divergent thinking.

Finally, while a significant negative relationship between anxiety and creativity was only found when originality was used as the dependent variable, it is plausible that there is a curvilinear relationship between anxiety and divergent thinking. High or low levels of anxiety might be negatively related to divergent thinking, while intermediate anxiety levels would be positively related. The statistical tests employed in this study were not adequate to detect such a relationship.

Conclusions

On the basis of the above discussion, the following conclusions may be drawn:

1. The hypothesised results, predicting both need for approval and anxiety to be negatively related to divergent thinking, and also an interaction between need for approval and anxiety on divergent thinking, were obtained only when originality was used. No significant results were obtained for Fluency, Flexibility, or Combined Divergent Thinking Scores.
2. Need for approval was found to be negatively related to originality as predicted.
3. The relationship between anxiety and originality approached significance in the direction predicted.
4. The need to measure creativity as comprehensively as possible, and across different populations, was identified and discussed in relation to the results obtained.
5. The possibility that anxiety might be curvilinearly related to divergent thinking was suggested.

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Table 1

Cell Frequencies for the Analysis of Variance

		Anxiety (A)		
		High	Low	Totals
Need for Approval (B)	High	32	21	53
	Low	19	32	51
	Totals	51	53	104=N

Table 2

Summary of Mean Scores for High and Low Levels of Anxiety and Need for Approval

		Mean	S.D.	t
Anxiety				
	High	19.588	3.705	22.511*
	Low	6.340	2.112	
Need for Approval				
	High	22.377	2.963	21.975*
	Low	10.392	2.577	

*$p < .0001$ (df=102).

Table 3

Summary of the Results of the Four ANOVAS for Anxiety and Need for Approval on Fluency, Flexibility, Originality, and Combined Creativity Scores

Source	df	MS	F	P	Dependent Variable
Anxiety	1	147.53	1	n.s.	Fluency
	1	34.90	1	n.s.	Flexibility
	1	88.15	3.38	p .10*	Originality
	1	40.29	1	n.s.	Combined Creativity
Need for Approval	1	403.65	1	n.s.	Fluency
	1	11.50	1	n.s.	Flexibility
	1	111.76	4.44	p .05*	Originality
	1	20.29	1	n.s.	Combined Creativity
Interaction	1	733.78	2.34	n.s.	Fluency
	1	58.22	1	n.s.	Flexibility
	1	7.10	1	n.s.	Originality
	1	117.49	1.80	n.s.	Combined Creativity